

## CLAIMS

We Claim:

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1. A system for monitoring a medical condition:

an apparatus that condenses a sample of an  
individual's breath on a film;

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a sensor in close proximity to said film;

a processing receiver; and

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said sensor in real-time communication with said  
receiver.

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2. The system as recited in claim 1, wherein said  
apparatus is a general mask or another device for  
directing the patients' breath towards said film.

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3. The system as recited in claim 1, wherein said sensor  
is designed to monitor pH.

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4. The system as recited in claim 1, wherein said medical  
condition is a respiratory condition, such as asthma,  
gastroesophageal reflux or laryngopharyngeal reflux.

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5. The system as recited in claim 1, wherein said  
communication is accomplished by a plurality of wires.

6. The system as recited in claim 1, wherein said communication is accomplished by a wireless means.
- 5 7. The system as recited in claim 1, wherein said apparatus has a means to continuously circulate and replace said sample of liquefied breath with a fresh sample of liquefied condensed breath.
- 10 8. The system as recited in claim 1, wherein said apparatus has a means to monitor the condensate temperature on said film.
- 15 9. A system for monitoring and diagnosing a medical condition:
- an apparatus that condenses a sample of an individual's breath on a film;
- 20 a sensor in close proximity to said film;
- a processing receiver;
- 25 said sensor in real-time communication with said receiver; and
- 30 said processing receiver processing said information for determining various diagnoses.
- 35 10. The system as recited in claim 9, wherein said apparatus is a general mask or another mask-less device

for directing the patient's breath in close proximity to said sensor.

5 11. The system as recited in claim 9, wherein said medical condition is a respiratory condition, such as asthma, gastroesophageal reflux or laryngopharyngeal reflux.

10 12. The system as recited in claim 9, wherein said communication is accomplished by a plurality of wires.

15 13. The system as recited in claim 9, wherein said communication is accomplished by a wireless means.

14. The system as recited in claim 9, wherein said sensor is designed to monitor pH.

20 15. The system as recited in claim 9, wherein said apparatus has a means to continuously circulate and replace said sample of liquefied breath with a fresh sample of liquefied condensed breath.

25 16. The system as recited in claim 9, wherein said apparatus has a means to monitor the condensate temperature on said film.

30 17. A system for monitoring, diagnosing, and treating a medical condition:

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an apparatus that condenses a sample of an individual's breath on a film;

a sensor in close proximity to said film;

a processing receiver;

said sensor in a first real-time communication with said receiver;

said processing receiver processing said information for determining various diagnoses and treatments; and

said processing receiver in a second communication with at least one treatment device to administer at least one therapeutic dose.

18. The system as recited in claim 17, wherein said apparatus is a general mask or another mask-less device for directing the patient's breath in close proximity to apparatus.

19. The system as recited in claim 17, wherein said medical condition is a respiratory condition, such as asthma or laryngopharyngeal reflux.

20. The system as recited in claim 17, wherein said first communication is accomplished by a plurality of wires.

21. The system as recited in claim 17, wherein said first communication is accomplished by a wireless means.

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22. The system as recited in claim 17, wherein said second communication is accomplished by a plurality of wires.

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23. The system as recited in claim 17, wherein said second communication is accomplished by a wireless means.

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24. The system as recited in claim 17, wherein said sensor is designed to monitor pH.

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25. The system as recited in claim 17, wherein said treatment is a biocompatible agent capable of neutralizing an acidic condition.

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26. The system as recited in claim 17, wherein said treatment is sodium bicarbonate.

27. The system as recited in claim 17, further comprising a communication between said processing receiver and a nebulizer/atomizer/humidifier.

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28. The system as recited in claim 17, further comprising a third communication between said processing receiver and a continuous positive airway pressure device.

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29. An apparatus for monitoring breath chemistry comprising:

a sensor;

a collection pool located on a film;

a solid-state cooling means, said cooling means in close proximity with said film;

said cooling means reducing the temperature of said sensor below the dew point of a patient's breath such that the patient's breath condenses into a liquid that condenses on the film; and

said sensor immersed in said liquefied breath in said collection pool.

30. An apparatus as recited in claim 29, further comprising a means to expel and replenish said collection pool with fresh liquefied patient's breath condensate.

31. The system as recited in claim 29, wherein said apparatus has a means to monitor the condensate temperature on said film.